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Office of the Secretary
Federal Communications Commission
Washington D.C. 20554

In Reply to the Notice of Inquiry Regarding the Implementation of Section 255 of the Telecommunications Act of 1996; WT Docket #96-198, FCC 96-382

Thank you for the opportunity to submit comments on Section 255. I am a hard of hearing person with considerable knowledge of assistive technology for people with hearing loss. As a clinical social worker, I am also particularly aware of the many complications which affect the ability of people with disabilities to utilize technology, both generalized and adaptive.

I deeply appreciate Congress's action to address the need for telecommunications to be directly accessible to people with disabilities. Many people have undiagnosed invisible disabilities; others may know that they have a disability yet not utilize adaptive equipment due to ignorance or cultural, psychological or economic reasons. (The average length of time a hard of hearing person takes to obtain a hearing aid after the onset of hearing loss is 7 years.) Our entire society will benefit from people using accessibility features to enhance their learning, their productivity and their quality of life. Additionally, there are many times when even people without disabilities will utilize accessibility features to compensate for such handicapping situations as noise, lack of privacy, dim lighting, or malfunctioning equipment. Making telecommunications equipment and services accessible thus should result in greater efficiency across the board, not merely for people with known disabilities, and should generally provide a profitable return on the investment of the time and resources.

In the following paragraphs, please note that numbers will generally refer to the FCC's numbered sections in its Notice of Inquiry.

2. Comment: Section 255 (b) should apply to manufacturers of specialized customer premises equipment and providers of specialized services for people with disabilities. In addition, it may be desirable to clarify that if equipment or services cannot be made directly usable by people with disabilities, efforts should be made to provide compatibility with adaptive services (such as telecommunications relay services).

7. There are many hidden costs to society when equipment and services are not accessible. Lack of access will generally result in inefficiency, underutilization of the service or product, inability to accomplish certain tasks, involvement of other people to compensate (increased utilization of customer services and technical support), economic sacrifices to the

individual, and curtailment of activities for the individual and other people in that person's life. Valuable time is lost and the quality of life is adversely affected not only for people with disabilities but for the millions of Americans who are part of their lives.

The FCC needs to exercise a strong leadership role to facilitate and expedite cost effective and comprehensive methods of providing access. Traditionally, accessibility has been a secondary consideration which then had to fit existing paradigms, services and equipment. Instead, it would be possible to anticipate ideal methods of providing access and then explore how telecommunications equipment and services could incorporate them. This is the opportunity we have; the entire country would benefit by an intelligently proactive approach to addressing accessibility.

To keep pace with advances in technology, a body formed of knowledgeable advocates for people with disabilities and representatives from various industries will need to be charged with anticipating and evaluating accessibility issues affected by changes in technology. This body should then initiate collecting and publishing concrete, practical methods of providing access for different types of equipment and services. Dissemination of useful, practical information about **how** to provide access would assist small companies in providing accessibility features and help them avoid making mistakes in providing inaccessible features. (Note: these methods might be options, not requirements, since a company might be able to implement a better way of achieving the same end goal.)

8. Many services will converge in the future. Cable, television, Internet, radio, voice mail, fax answering and delivery, fax-back services, paging, cellular phone, wireless modem and telecommunications relay services should all be included as telecommunications services covered by this Act.

9. Equipment should be understood to include free-standing software (such as for voice mail systems and telephony). Other equipment that are used with telecommunications are:

-Computers
-TV tuner cards (which should support captioning)
-Data Modems (should support Voice Carry Over relay services)
-Cable modems (should support captioning)
-Cable decoders (some have already directly enabled captioning)
-TTYs (should be compatible with computers receiving TTY calls and with assistive devices for blind people or people with mobility problems)
-Cellular and cordless telephones
-Answering machines (both voice and fax)
-Routers of phone calls (should identify Baudot/data/fax/voice calls to send the call to the appropriate device)
-Personal digital assistants (PDAs) or communications assistants (PCAs) with telecommunications capability
-PC modem cards
-Radio tuner cards and radios (may be able to display captioning in the

future when captioning becomes available but could also be made accessible to blind users)
-Headphones with or without attached microphones (could have volume control, hearing aid compatibility)
-Telecommunications equipment used by telecommunications relay services (could provide Voice Carry Over and video relay services via simultaneous transmission of voice and data on the same phone line via ISDN, DSVD (digital simultaneous voice data) modems).

10. Telecommunications relay services need to be used to provide access to telecommunications in those cases where providing access to a customer's CPE may not be readily achievable. It would be helpful for the FCC to involve providers of such relay services to find ways to make access in such cases much more timely and efficient. Relay services might be able to expedite access to existing inaccessible voice mail systems, for example. Relay services, carriers, and providers of these otherwise inaccessible services and equipment need to be held responsible for finding solutions together.

Providers of telecommunications relay services need to utilize advances in technology to a) provide access to new forms of telecommunications, b) improve the efficiency and quality of current relay services and c) drive the demand to create and manufacture new CPE compatible with new services.

11. Should the Commission give weight to the different standards confronted by a manufacturer with markets in other nations? No. The standard of "readily achievable" should be adequate. Many accessibility features should transfer to the foreign markets and help improve the marketability of products in those countries. The Americans with Disabilities Act should also influence many employers to avoid purchasing services and equipment inaccessible to present and future employees, so companies would risk losing many new customers if they decline to make their products and services accessible.

12. Companies should be held responsible for addressing accessibility issues during the design stage and later stages. Early consideration of accessibility should prevent the final package from being inaccessible.

16. If the FCC publicizes accessibility problems and solutions, this will help companies meet accessibility requirements and increase the marketability of their products and services. It should be comparatively rare not to be able to make a product or service accessible if useful information about how to provide access is well done and easily attainable.

Companies should adopt improved accessibility measures in new product releases or upgrades which would have occurred anyway. (Modularity could help ease the cost of upgrading access measures.) Software upgrades and technical information regarding accessibility should be made available on the Internet and other media, ideally at no cost to the user.

17. Addressing accessibility issues early in the design stage and at every

stage should help keep costs relatively low. In the future, companies that fail to address accessibility issues in a timely manner and which then complain providing accessibility would be too expensive should not be excused from providing access if it would have been readily achievable to provide access earlier in the design stage. In such cases, companies could be required to provide accessible alternatives at no cost to users with disabilities until universally accessible products and services can be designed and provided to the general public. The failure to consider accessibility issues in a timely fashion should not be used to excuse providers and manufacturers from making their services and products accessible.

18. A concerted effort to provide practical assistance and open standards for making products and services accessible would help both large and small companies meet accessibility requirements.

19. Yes, the entire operations and resources of a parent corporation and its subsidiaries should be taken into consideration in determining what is readily achievable. This should enhance greater cooperation and efficient sharing of resources rather than promote departmental or facility efforts to economize at the expense of accessibility.

21. Manufacturers of telecommunications equipment should communicate installation requirements for optimizing accessibility. Internal feedback mechanisms might be available to detect whether accessibility features are working, whether there is interference, etc. (For example, pay phones in airports are frequently inaccessible to hard of hearing people because of electromagnetic interference from nearby monitors and other equipment.)

22. Equipment and services should be accessible to as many different types of disabilities as possible. This would help people with dual disabilities, for example,those people with undiagnosed disabilities who would not seek out specialized equipment and services, people with sudden and/or temporary disabilities, and non-disabled people in handicapping situations. The great number of elderly people with slower cognitive processing ability, poor visual acuity and less acute hearing would also benefit from universally accessible equipment and services. For these reasons and others, companies should strive to make all of their telecommunications equipment and service offerings universally accessible. Nevertheless, it is possible that optimal access for people with a particular disability might render the equipment or service incompatible with the needs of other people. Generally it should be possible to provide a high level of broad accessibility in the mainstream equipment or service, but in some instances, alternative models to provide a better level of access might be desirable and necessary.

23. Please refer to the list of equipment in my reply to #9. The following are additions to those comments:

-Many but not most pay phones have volume control on them
-Many emergency call boxes may not be accessible to people with disabilities

-Locating pay TTYs is very difficult
-Digital wireless telephones which incorporate GSM/PCS TDMA technology generate substantial interference in many hearing aids and do not provide sufficient amplification
-Few modems support Baudot compatibility
-Telecommunications relay services do not presently provide single-line voice carry over (VCO) or hearing carry over (HCO) relay service to computer users with standard modems. It should be possible to do this with equipment (ISDN, DSVD modems, cable modem?) that permits simultaneous transmission of voice and data. Stand-alone devices (similar to TTYs) could be manufactured as an alternative to computers.
-AT&T's Operator Services for the Deaf provides a computerized bridge between Baudot-only TTYs and computers, but the initiator of the call may or may not have to pay for this service. (The relay services could possibly be charged to offer this service in the future.)
-Blind people sometimes have access to a volunteer fax reader service
-Some TV tuners support closed captioning (Macintosh, Reveal, Hauppage), but several do not.
-Many voice mail systems are inaccessible to users of TTYs, even when they are using relay services since they disconnect before the operator finishes relaying messages back and forth, and no option is provided for TTY users. (Rolm, however, apparently provided for TTY support several years ago, but I myself have not tested this.)
-Videophones could potentially support captioning provided by the relay service or other mechanisms such as speech recognition software
-Headphones used with telephony software on computers can provide sound to both ears, which can make a world of difference in speech comprehension to some hard of hearing individuals.
-Answering machines are very difficult for many people with hearing loss to manage. They usually are not equipped with an output audio jack and thus cannot be made compatible with most assistive listening technology.
-Deafened people live with other people with normal hearing and cannot tell quickly enough whether a call is voice, fax or TTY; a Baudot-compatible modem on the market may address this problem but it is quite expensive.

25. Existing peripheral devices include assistive listening devices and TTYs. Customer premises equipment should be made directly accessible to users of hearing aids with telecoils but also to people with hearing loss but no hearing aids. (The ability to listen to sound through one's hearing generally protects the ears from further damage from loud sound.)

27. Telecommunications carriers should ensure the accessibility of new services and associated equipment before investing in this new service. Equipment manufacturers should not be held responsible for being unable to make an inaccessible service accessible.

28. See earlier reply to #7. Technical experts and other interested parties should be encouraged to give input into developing practical suggestions for accessibility measures. These measures would then help establish what might be readily achievable with respect to enforcement measures.

29 and 30. It would be more effective and helpful for the FCC to promulgate general standards about what should be the final accessibility capabilities for equipment and services, and then provide information about how to provide these capabilities in specific applications. For example, general standards could say equipment should be compatible with the telecoils of hearing aids, and should have easily accessible volume control and the ability to change the frequency and amplitude of alerting or signaling sounds. (Equipment should also provide ways to attach peripheral devices such as patch cords for cochlear implants and neck loops for people who need to use both ears.) Practical information or suggestions for specific applications could also be given to facilitate better compliance without requiring companies to use the specific suggestions if they can meet the same accessibility standard another way. Suggestions for alternatives if a particular standard is not readily achievable would also be helpful.

I anticipate that general accessibility standards could be developed and promulgated for both equipment manufacturers and service providers in draft form for public comment but could also serve as interim guidelines. Specific methods of achieving these standards could be published (on the Internet) and also be subject to public comment.

31. Generally, service providers should investigate whether a particular type of technology can be made accessible prior to signing contracts using that technology. Companies which choose to invest in inaccessible technologies when there are more accessible technologies available should be held responsible for providing work-arounds at no cost to users with disabilities.

32. I believe guidance and policy statements should be helpful if they are worded carefully and in consultation with expert industry leaders and people with disabilities. However, the processes that would be viewed favorably should be very carefully written. For example, "consultation with the disability community" is too vague and does not specify consultation with members from each disability group and with people knowledgeable about adaptive technology and functional impairments for the pertinent disability groups. Comparatively few people with disabilities may be knowledgeable enough to provide adequate consultation about making accommodations for the diverse needs of people in their own disability group. This is one reason why it is very important to bring together knowledgeable people at a federal level to assist in the development of guidelines, standards and methods of providing access; it will be very difficult for geographically scattered businesses to obtain skilled and comprehensive consultation on a local basis.

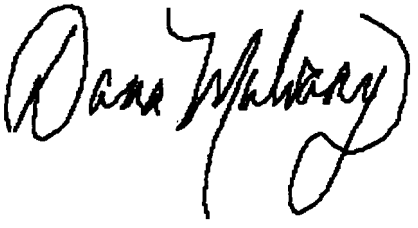
One defense should be documentation of efforts to address accessibility early in the design stage and on an ongoing basis, including consideration of any relevant public information on accessibility from the FCC. There should be documentation of reasons for decisions which result in lowered accessibility.

34. A mix of requirements and recommendations would be ideal. Setting forth accessibility requirements on a service-by-service basis would be desirable

in some situations but might retard advances in technology in others. Issuing recommendations rather than requirements due to the need to accommodate changes in technology would suffice for some issues but fail to provide strong enough guidance in others. As mentioned previously, general accessibility standards could address the need for services to be accessible in different ways but not impose specific ways of attaining those end goals.

Thank you for reviewing these comments. The work of the FCC and of Congress in this area will incalculably change the lives of millions of people. Thank you for your part in improving the quality of life for so many people.

Sincerely,



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